

Application No. 10/717,975
Amendment dated February 26, 2009
Reply to Office Action of August 27, 2008

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Docket No.: 51200(70329)

REMARKS

Claims 1, 63 and 64 have been cancelled without prejudice. No new matter has been added.

Claims 1, 22, 52, 63, and 60-71 were rejected under 35 U.S.C. 103 over Motoyama (EP 408334) in view of Knors et al. (U.S. Patent 5800963) and Thackeray et al. (U.S. Patent 5851738). The rejection is traversed.

It has been specifically acknowledged that "[t]he Knors reference fails to teach or suggest the presence of a silicon-containing component."

It is also acknowledged that "[t]he Motoyama et al. reference further fails to specify additional, conventional components of the underlayer such as a crosslinker." See page 3 of the Office Action.

The Thackeray document is then cited for a further disclosure of an antihalation composition.

As an initial matter, persons skilled in the art do not readily expect that a bottom layer used with a novolak photoresist as reported in Knors would be useful with a Si-photoresist as reported in the other cited documents. Indeed, no evidence has been made of record to substantiate the desirability of combining such materials as has been proposed by the instant rejection.

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Moreover, even if one assumes for argument's sake that the proposed combination of documents may be legitimate, none of the cited documents, whether considered alone or in combination, disclose an organic underlayer composition with an above photoresist composition as Applicants claim.

Thus, Applicants claim 22 (the only pending independent claims) calls for:

A method for forming a photoresist relief image comprising:

a) applying an organic underlayer composition coating layer on a substrate, the underlayer composition comprising (i) a first resin that comprises phenol groups; (ii) a second acrylate resin that is distinct from the first resin and comprises one or more anthracene groups; (iii) a crosslinker component that is distinct from the first resin and second resin, the crosslinker comprising a benzoquanamine compound or a melamine compound; and (iv) an acid or acid generator compound;

b) applying a positive-acting photoresist composition coating layer over the underlayer composition, the photoresist composition comprising a photoactive component and one or more resins that comprise Si groups, phenolic groups and photoacid-labile groups; and

c) exposing the photoresist layer to radiation having a wavelength of about 248 nm.

These organic underlayer compositions and photoresist compositions are preferred aspects of Applicants' invention. See, for instance, the present application at page 4, lines 19-26; page 6; and the original claims.

Such underlayer compositions as recited in Applicants' independent claim 22 also are specifically exemplified in the examples of the application. For instance, Example 1 on pages 27-28 of the application discloses an underlayer composition that comprises 1) a polyvinylphenol; 2) a resin that contains polymerized units of methylmethacrylate/ anthracene acrylate/ethylhydroxyacrylate; and 3) a crosslinker component distinct from such resins.

The linchpin Knors document does not disclose an underlayer composition that comprises multiple resins as Applicants claim. The Knors document also does not disclose use of a crosslinker component as Applicants claim.

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The Thackeray document also does not exemplify antihalation composition that have multiple resins as Applicants claim.

The Motoyama et al. is also quite distinct and reports a certain negative-acting photoresist. See, for instance, Motoyama et al. at page 5, line 37, where formation of a negative pattern is disclosed.

In contrast, Applicants claim a positive-acting photoresist.

In view thereof, reconsideration and withdrawal of the rejections are requested.

It is believed the application is in condition for immediate allowance, which action is earnestly solicited.

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Respectfully submitted,

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